

Appl. No. 10/605,427
Amdt. dated February 1, 2005
Reply to Office action of January 5, 2005

AMENDMENTS TO THE CLAIMS

1. (original) An amplifier with substantially fixed input
5 impedance when operating in a plurality of gain modes, the
amplifier comprising:
an input port for receiving an input signal;
a gain circuit for amplifying the input signal by
corresponding gain ratios in various gain modes;
10 a plurality of resistive negative feedback circuits
electrically connected to the input port and the gain
circuit for keeping the input impedance of the amplifier
substantially fixed in various gain modes; and
an output port for outputting the input signal amplified by
15 the gain circuit.
2. (original) The amplifier of claim 1 wherein in a gain
mode, a feedback signal is fed back to the input port via
at least a corresponding resistive negative feedback circuit
20 so as to keep the input impedance of the amplifier
substantially fixed in various gain modes.
3. (original) The amplifier of claim 2 further comprising
at least a switch device electrically connected to at least
25 a predetermined resistive negative feedback circuit for
determining whether the feedback signal is fed back to the input
port via the predetermined resistive negative feedback circuit
according to various gain modes.
- 30 4. (original) The amplifier of claim 1 wherein the gain

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circuit comprises a plurality of bipolar junction transistors
or a plurality of MOS transistors.

- 5 5. (original) The amplifier of claim 1 wherein the
plurality of resistive negative feedback circuits are
respectively a resistor electrically connected to a capacitor.
6. (original) The amplifier of claim 1 being a low-noise
10 amplifier.
7. (original) The amplifier of claim 6 being applied to
a receiver of a wireless communication system.
- 15 8. (original) A method used in an amplifier for keeping the input
impedance of the amplifier substantially fixed in a plurality
of gain modes, the amplifier comprising a gain circuit and a
plurality of resistive negative feedback circuits, the method
comprising:
- 20 utilizing the gain circuit to switch the amplifier among
various gain modes; and
utilizing the plurality of resistive negative feedback
circuits to keep the input impedance of the amplifier
substantially fixed in various gain modes.
- 25 9. (original) The method of claim 8 wherein the amplifier
further comprises an input port and an output port, the method
further comprising:
- 30 utilizing the input port to receive an input signal;
utilizing the gain circuit to amplify the input signal by

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corresponding gain ratios in various gain modes;
making a feedback signal be fed back to the input port via
at least a corresponding resistive negative feedback
5 circuit in various gain modes so that the input impedance
of the amplifier remains substantially fixed in various
gain modes, wherein the feedback signal is related to the
input signal; and
utilizing the output port to output the input signal amplified
10 by the gain circuit.

10. (original) The method of claim 9 wherein the amplifier
further comprises a switch device electrically connected to
a predetermined resistive negative feedback circuit, the
15 method further comprising:
turning on or turning off the switch device according to the
various gain modes to determine whether the feedback signal
passes the predetermined resistive negative feedback
circuit to the input port.

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11. (original) The method of claim 9 wherein the amplifier
further comprises a plurality of switch devices respectively
electrically connected to the plurality of resistive negative
feedback circuits, each switch device corresponding to a
25 resistive negative feedback circuit, the method further
comprising:

turning on at least a switch device in each gain mode
so that the feedback signal is fed back to the input port via
the corresponding resistive negative feedback circuit.

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12. (original) The method of claim 8 wherein the plurality of resistive negative feedback circuits are respectively a resistor electrically connected to a capacitor.

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13. (original) The method of claim 8 wherein the amplifier is a low-noise amplifier.

14. (withdrawn) A differential amplifier with substantially fixed input impedance when operating in a plurality of gain modes, the differential amplifier comprising:

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a positive input port for receiving a positive input signal;
a negative input port for receiving a negative input signal;
a positive amplifier circuit electrically connected to the positive input port, the positive amplifier circuit comprising:

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a positive gain circuit for amplifying a positive input signal by corresponding gain ratios; and

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a plurality of positive resistive negative feedback circuits for keeping the input impedance of the positive amplifier circuit substantially fixed in various gain modes; and

a negative amplifier circuit electrically connected to the negative input port, the negative amplifier circuit comprising:

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a negative gain circuit for amplifying a negative input signal by corresponding gain ratios; and

a plurality of negative resistive negative feedback circuits for keeping the input impedance of the negative amplifier circuit substantially fixed in

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various gain modes;

a positive output port electrically connected to the
positive amplifier circuit for outputting the processed
positive input signal; and

a negative output port electrically connected to the
negative amplifier circuit for outputting the processed
negative input signal.

10 15. (withdrawn) The differential amplifier of claim 14
wherein the input impedance of the positive amplifier
circuit is the same as the input impedance of the negative
amplifier circuit, and the input impedance of the
differential amplifier is a mathematical combination
15 between the input impedance of the positive amplifier
circuit and the input impedance of the negative amplifier
circuit.

16. (withdrawn) The differential amplifier of claim 14
20 wherein in each gain mode, in the positive amplifier
circuit, a positive feedback signal is fed back to the
positive input port via at least a corresponding positive
resistive negative feedback circuit, so that the input
impedance of the positive amplifier circuit remains
25 substantially fixed in various gain modes.

17. (withdrawn) The differential amplifier of claim 16
wherein the positive amplifier circuit further comprises
at least a switch device electrically connected to at least
30 a predetermined positive resistive negative feedback

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5 circuit for determining whether the positive feedback signal passes the predetermined positive resistive negative feedback circuit to the positive input port according to the various gain modes.

10 18. (withdrawn) The differential amplifier of claim 16 wherein in the positive amplifier circuit, the plurality of positive resistive negative feedback circuits are respectively a resistor electrically connected to a capacitor.

15 19. (withdrawn) The differential amplifier of claim 14 wherein in each gain mode, in the negative amplifier circuit, a negative feedback signal is fed back to the negative input port via at least a corresponding negative resistive negative feedback circuit, so that the input impedance of the negative amplifier circuit remains substantially fixed in various gain modes.

20 20. (withdrawn) The differential amplifier of claim 19 wherein the negative amplifier circuit further comprises at least a switch device electrically connected to at least a predetermined negative resistive negative feedback circuit for determining whether the negative feedback signal passes the predetermined negative resistive negative feedback circuit to the negative input port according to various gain modes.

30 21. (withdrawn) The differential amplifier of claim 19

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wherein in the negative amplifier circuit, the plurality
of negative resistive negative feedback circuits are
respectively a resistor electrically connected to a
5 capacitor.

22. (withdrawn) The differential amplifier of claim 14
being a low-noise differential amplifier applied to a
receiver of a wireless communication system.
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